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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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|-----------------|-------------|----------------------|---------------------|------------------|

10/687,938

10/20/2003

Darck Nowak

038741.52865US

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09/21/2006

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EXAMINER

KOEHLER, CHRISTOPHER M

ART UNIT

PAPER NUMBER

3726

DATE MAILED: 09/21/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|---|-------------------------------------|--|
| Office Action Summary | Application No. 10/687,938 | Applicant(s) NOWAK ET AL. | |
| | Examiner Christopher M. Koehler | Art Unit 3726 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 June 2006.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) 10-14, 24-27 and 29 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 2, 5, 7, 15, 16, 19 and 21 is/are rejected.
- 7) ☒ Claim(s) 3, 4, 6, 8, 9, 17, 18, 20, 22, 23 and 28 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>5/28/04, 10/20/03</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of Species A, claims 1-9, 15-23 and 28 in the reply filed on 6/28/2006 is acknowledged.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1, 2, 15 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant Admitted Prior Art (AAPA) in view of Frederick et al (US Patent No. 3,811,163).

Claims 1 and 2:

AAPA teaches a method for the manufacture of components composed of difficult to cut materials for turbines by producing recesses with one or more side walls in particular for manufacturing integrally bladed rotors for gas turbines, the recesses forming flow channels and the side walls forming blade surfaces comprising the steps of defining the contours of the recesses by defining contours of at least one of the side-walls and the flow channels and removing the material in the region of the flow channels by a milling process (specification; page 1, lines 17-29). AAPA does not teach removing material in the regions by drilling prior to removing the material by milling.

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Frederick teaches using a tool for plunge milling (drilling) to rough cut a profile (16, 18) prior to finish milling sized for the area to be removed. See Figure 2 and col. 3, lines 46-54.

It would have been obvious to one of ordinary skill in the art at the time of invention to apply the drilling step of Frederick to the process of AAPA since Frederick teaches that rough cutting by drilling prior to finish milling reduces time needed to machine (col. 2, lines 46-50), increasing overall tool life (col. 2, lines 61-65), and producing small chips that are readily removed from the cutting area (col. 2, lines 58-60).

Claims 15 and 16:

AAPA teaches a method for the manufacture of components composed of difficult to cut materials for turbines by producing recesses with one or more side walls in particular for manufacturing integrally bladed rotors for gas turbines, the recesses forming flow channels and the side walls forming blade surfaces comprising the steps of defining the contours of the recesses by defining contours of at least one of the side-walls and the flow channels and removing the material in the region of the flow channels by a milling process (specification; page 1, lines 17-29). AAPA does not teach removing material in the regions by drilling prior to removing the material by milling.

Frederick teaches using a tool for plunge milling (drilling) to rough cut a profile (16, 18) prior to finish milling sized for the area to be removed. See Figure 2 and col. 3, lines 46-54.

It would have been obvious to one of ordinary skill in the art at the time of invention to apply the drilling step of Frederick to the process of AAPA since Frederick teaches that rough cutting by drilling prior to finish milling reduces time needed to machine (col. 2, lines 46-50), increasing overall tool life (col. 2, lines 61-65), and producing small chips that are readily removed from the cutting area (col. 2, lines 58-60).

4. Claims 5, 7, 19 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over AAPA/Frederick as applied to claims 1, 2, 15 and 16 above, and further in view of Lowe (US Patent No 6,077,002).

Claims 5, 7, 19 and 21:

AAPA/Frederick teaches the method as set forth above but does not explicitly teach calculating centerlines for the cutting of the flow channels.

Lowe teaches the milling of an integrally bladed rotor by milling. Lowe also teaches that the blade is mounted in a milling machine having axes for movement following complex 3-D milling paths through the blank which therefor must be predetermined and calculated to input the 3-D paths for milling (col. 3, line 50-col. 4, line 34).

It would have been obvious to one of ordinary skill in the art at the time of invention to apply the predetermined calculations of the flow lines as done by Lowe to the process of AAPA/Frederick since the predetermined calculations of the flow lines communicate to the milling machine the precise dimensions and machining paths needed to create an accurate part.

Allowable Subject Matter

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5. Claims 3, 4, 6, 8, 9, 17, 18, 20, 22, 23 and 28 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

6. The following is a statement of reasons for the indication of allowable subject matter: The prior art does not teach the drilling of the workpiece in the flow wise direction in combination with the other limitations of the claims.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher M. Koehler whose telephone number is (571) 272-3560. The examiner can normally be reached on Mon.-Fri. 7:30A-4:00P.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Bryant can be reached on (571) 272-4526. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

CMK



DAVID P. BRYANT
SUPERVISORY PATENT EXAMINER

9/19/06